# WASHINGTON STATE DEPARTMENT OF TRANSPORTATION EASTERN REGION

# VALUE ENGINEERING STUDY REPORT AND WORKBOOK

# US 195 CORRIDOR SAFETY IMPROVEMENT STUDY

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ENGINEERING MANAGEMENT SERVICES OLYMPIA, WASHINGTON

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#### US 195 CORRIDOR SAFETY IMPROVEMENT STUDY

# **Value Engineering Summary Report**

#### INTRODUCTION

The (VE) Study for the US 195 Corridor was completed on January 8, 1999. Considering the complexity of the issues involved with the Study and the multi-jurisdictional aspects to be considered, the VE Team was composed of members from the various affected public agencies and from the community including:

- Washington State Department of Transportation
   Eastern Region planning, design, traffic, and environmental.
   Olympia Service Center, traffic design and operations.
- City of Spokane Planning and traffic engineering.
- Spokane County, Engineering.
- Spokane Regional Transportation Council, planning.
- Federal Highway Administration.
- Citizen's Advisory Committee.
- Representatives from the neighborhood communities.

A complete roster of the VE Study participants is included in the Workbook Section of this Report.

The project proposes to provide safety and operational improvements to the traffic flow through the Latah Valley corridor between Interstate 90 on the north and Hatch Road on the south. The segment of US 195 included in this Study is approximately five miles in length.

Specifically the Thorpe Road intersection has been identified as a "Hazardous Accident Location" (HAL) and the portion of the route near the north end is identified as a "Hazardous Accident Corridor" (HAC). Within the Study section there are presently seven major intersections and several minor intersections and access driveways. Conflict associated with the slow moving entering, turning, and exiting traffic mixing with the high speed freeway traffic is the primary cause of the increasing accidents.

Throughout the corridor there are numerous locations where growth is anticipated during the twenty year planning period, primarily in the form of residential developments. The increased traffic associated with this growth will continue to exacerbate the traffic safety and operational problems within the corridor.

#### **INVESTIGATION PHASE**

# **General Information**

The project managers conducted a project briefing for the Team to review the background and history of the project, present the proposed conceptual design information; and to discuss the drivers and constraints that will influence the design decisions. The briefing was followed by a field review to familiarize the Team with the transportation issues; development activities in the area; technical design issues; and environmental considerations.

US 195 is designated as a National Defense Highway and was constructed during the early 1960's as a high capacity, divided roadway (freeway) with partial access control. City arterial streets connect at grade intersections and single family driveway access is limited to only a few locations. This design concept has worked relatively well for thirty years, until the time when traffic has increased to the point where major conflicts occur with the entering and exiting traffic.

The safety project under consideration is located in the Hangman (Latah) Creek Valley and the environmentally sensitive stream channel, riparian areas, floodplain, and wetlands are adjacent to the roadway on the east side throughout most of the valley. In the northern portion of the project area (north of the Burlington Northern Railroad crossing), there are several city arterial streets which serve the communities on both sides of US 195. For the northern portion of the project connectivity of the arterial streets with US 195 occurs at 16<sup>th</sup> Avenue, Thorpe Road, and Inland Empire Way.

On the southern end of the project (south of the Burlington Northern Railroad crossing) connectivity of the City arterial streets occurs at Cheney-Spokane Road, Qualchan Drive, Meadowlane Road, Hatch Road, and White Road. There are a few other intersections serving isolated neighborhoods or local residences throughout the project. Most of the arterial streets within the corridor do not interconnect in a north/south direction and terminate at the intersections with US 195. At the present time, US 195 is utilized for the long distance freeway traffic to and from the south and also for most of the local north/south traffic within the corridor.

Residential development is expected to be heavy on the west side of US 195 during the next several years. Most of the traffic generated by the planned residential developments will be in the areas served by Meadowlane Road, Cheney-Spokane Road, and Thorpe Road. Commercial development is expected to be concentrated in the triangle of land immediately south of the Cheney-Spokane Road intersection with US 195 where the existing commercial activities are now located.

Hatch Road on the south end of the project serves as the local arterial connection to a large service area on the south hill of Spokane east of US 195. Traffic along this arterial connection and from the south hill is also expected to increase substantially during the design period. The Inland Empire Way serves as a local collector road through the residential neighborhood adjacent to Hangman Creek on the east side of US 195 between the Burlington Northern Railroad and the southwest business district of Spokane.

#### **Constraints and Controlling Decisions**

During the development of the preliminary concepts for the proposed traffic safety and operational improvements, the Region design staff have established some parameters to guide the

development of the project. The primary goals of the project are to provide the necessary traffic safety improvements; preserve the operational characteristics and mobility on US 195 through this rapidly developing area; and to provide safe and effective interchange access at strategic locations.

Several controlling decisions have been established to guide the development of the plan for the improvements as follows:

#### 1. Traffic Signals

No traffic signals will be installed on US 195. The highway is part of the National Highway System and has a significant role in supporting inter-city and interstate commerce. Traffic signals will degrade the traffic operations and mobility as traffic increases and will lower speeds resulting in increased carbon monoxide emission rates.

## 2. Reduced Speeds

This section of US 195 was constructed as a four lane divided rural freeway, and was designed to carry traffic at normal freeway speeds. Driver perception is therefore to drive this facility at highway speeds. Attempts to slow traffic by signing will not be effective, given the character of the highway. Safety improvements to be considered will retain the high speed capability of the freeway that was intended in the initial design.

#### 3. Interchange Spacing

Considering the physical and topographic restrictions within the valley and the location of the existing city arterial roadways it has been determined that two new interchanges could be provided with adequate spacing for the ramp design and traffic merging requirements. Local arterial streets or frontage roads may be needed to provide for local traffic circulation and connectivity.

# **FUNCTION ANALYSIS**

Before considering possible solutions to the safety problems, the Team discussed the functional requirements of the State Highways and City arterial roadways in the study area. The basic functions of this project are to improve the traffic operations and safety. Secondary functions include improving bicycle and pedestrian facilities, providing transit access, and enhancing the aesthetic and visual quality where possible. The Team identified the following areas and elements for specific focus during the Study.

#### **Environmental Design**

- Avoid or minimize impacts to Hangman Creek and associated riparian and wetland areas.
- Avoid the potential historic feature associated with Hangman Creek in the vicinity of Hatch Road.
- During the design phase, locate and evaluate the existing springs which may be impacted by the proposed design improvements.

# **Roadway Design**

• Location of interchanges.

- Access type and locations.
- Local traffic circulation within the corridor and connectivity with proposed interchanges.
- Preferred type of interchange at the proposed locations.
- Considerations for emergency services, transit, bicycle, and pedestrian traffic.
- Need for frontage roads or city arterial streets.
- Typical roadway sections.
- Alignments and profiles of connecting roads and interchange ramps.
- Intersection design considerations.

#### **Construction Sequence and Traffic Control**

• Consider construction priorities and staging options.

At the conclusion of the Investigation Phase, the Team identified three objectives to be achieved as a result of the Study.

- 1. Develop a preferred plan to address the proposed traffic safety and operational improvements (Master Plan) for the corridor considering the functional requirements for US 195 and for the local network of arterial streets.
- 2. Determine the preferred locations for the interchanges within the corridor.
- 3. Identify the priorities for the proposed safety improvements and the preferred sequence of actions or construction activities.

#### **SPECULATION PHASE**

During the Speculation Phase of the Study, the Team reviewed the proposed conceptual designs and offered new ideas for achieving the functional requirements of the project. The ideas and possible solutions offered by the Team for consideration are summed up as follows:

- Close the direct access to US 195 at 16<sup>th</sup> Avenue.
- Close the direct access to US 195 at Qualchan Drive.
- Provide an interchange in the vicinity of White Road or Hatch Road on the south end of the corridor.
- Provide an interchange at Meadowlane Road in lieu of the Hatch Road vicinity.
- Consider only a grade separation at Meadowlane Road with connection to a north/south arterial street on the west side of US 195.
- Connect an arterial street between Hatch Road and Qualchan Drive on the west side of US 195.
- Provide an interchange in the vicinity of the Cheney-Spokane Road intersection.
- Consider a split interchange with a half diamond configuration at Cheney-Spokane Road (south) and a half diamond configuration at the intersection with the Inland Empire Way (north).
- Consider possible ramp access connections in the vicinity of Thorpe Road.
- Provide an arterial street connection between Thorpe Road and Cheney-Spokane Road on the west side of US 195.

- Provide only a grade separation at Thorpe Road.
- Provide an arterial street between Thorpe Road and Lindeke Street on the west side of US 195, connecting at the corner of 13 th Avenue and Lindeke Street.
- Provide a frontage road or street between 16<sup>th</sup> Avenue and Thorpe Road on the east side of US 195 to provide access to the properties to the north of the Cascade Mobile Park.
- Consider a one way couplet system between Thorpe Road and Cheney-Spokane Road.
- Consider the use of roundabouts or other traffic calming techniques to discourage long distance trips through residential neighborhoods.
- Allow direct access to US 195 (right in/right out) for properties where access to local streets is not feasible, generally at single family residences.

These and other ideas were considered by the Team during the Evaluation Phase of the Study.

#### **EVALUATION PHASE**

# **Traffic Model Information**

As mentioned earlier, the traffic on the US 195 Corridor has increased steadily over the past thirty years. General growth patterns and additional planned development within the corridor will continue to increase the traffic congestion and conflicts at the existing intersections.

To provide a basis for the improvements considered by the Team, traffic analysis information was provided by the Spokane Regional Transportation Council (SRTC). The analyses conducted for this Study were done for the forecast year 2020. SRTC's forecast land use files include existing, approved, and proposed residential and commercial developments in the study area. In addition, the assumptions used to create these forecast files were made consistent with the Growth Management Act, forecast population allocations, and the Interim Urban Growth Areas as adopted by Spokane County.

Based on the results of the model, in the "No Build" scenario, the following locations become congested by the forecast year 2020: I-90; the I-90/US 195 Interchange; southbound SR 195 and nearly all of the intersections along US 195; Inland Empire Way and its intersections; southbound Cheney-Spokane Road and its intersections; westbound Qualchan Drive and its intersections; westbound Meadowlane to Eagle Ridge; and Hatch Road and its intersections. In other words, nearly every road in the corridor experiences congestion in the "No Build" conditions by the year 2020.

Considering these conditions if nothing is done to correct the congestion and traffic conflicts, the Team worked to develop an improved transportation arterial network for the corridor. This planning model would preserve the operational characteristics of the freeway and the major city arterial streets, and would provide improved local circulation and connectivity to allow more separation of the functions of the freeway and the functions of the local road system. The proposed Master Plan when implemented would reduce the uncontrolled traffic conflicts and resulting accidents.

#### **Hatch Road Interchange and City Arterial Street**

The Team considered the possibility of providing the southern interchange at either White Road, Hatch Road, or Meadowlane Road. The important considerations are the size of the area to be served, the traffic projected to use the interchange, topographical considerations, and the spacing to adjacent interchanges.

At White Road the interchange would be more difficult to construct and more difficult to connect to a local street arterial system. More wetlands and the historic site adjacent to Hangman Creek would be impacted by locating the interchange at White Road. Locating the interchange at Meadowlane Road would serve a smaller traffic demand compared with Hatch Road and there would be higher impacts to the residential communities and to the environment. The interchange at this location would also be much closer to the potential interchange at Cheney-Spokane Road.

Considering these elements, Hatch Road was selected as the preferred site for the interchange. Several advantages for the Hatch Road location are:

- Serves as the interchange connection for the regional arterial road carrying a large volume of traffic from the south hill area of Spokane.
- Serves as an efficient connection for emergency services, transit, and bicycle traffic.
- Eliminates the conflicts associated with the high volumes of traffic utilizing the intersection at this location.
- Replacement of the existing deficient Hangman Creek Bridge can be incorporated into the interchange construction, combining two significant public works projects.

Most of the disadvantages with the interchange at this location are associated with the steep terrain on the west side and with the proximity to Hangman Creek. These issues can be considered and optimized during the design phase of the project development.

The Team also considered the preferred type and configuration for the interchange. The preferred geometric design provides for diamond ramps at the NB exit ramp, NB entrance ramp, SB entrance ramp, and a loop for the SB exit ramp. It may be appropriate to combine the Hangman Creek Bridge replacement with the interchange structure to minimize impacts to the Creek and to simplify the design and construction.

In conjunction with the Hatch Road interchange the Team considered providing a city arterial street on the west side of US 195 that would connect Hatch Road to Meadowlane Road and the new proposed arterial serving the planned Eagle Ridge development. This would eliminate the need for an intersection to US 195 at this location.

#### **Team Recommendation No. 1**

In the Master Plan provide for the southern interchange to be located at Hatch Road. Consider a diamond interchange configuration with a loop ramp in the southwest quadrant to serve the SB exit ramp. Provide a local arterial street on the west side of US 195 to provide for local circulation between Hatch Road and Meadowlane Road.

#### Meadowlane Road Intersection and City Arterial Street

With the southern interchange located at Hatch Road, the safety improvements considered at Meadowlane Road would include closing the "at grade" intersection and providing access to a local arterial street connecting the new interchanges. This would be accomplished by providing a grade separation across US 195 to connect Meadowlane east and the Golf Course with Meadowlane west and the new proposed city arterial street system.

The Team evaluated both an overcrossing (Meadowlane over US 195) and an undercrossing (Meadowlane under US 195). The analysis concluded that an Overcrossing is preferred at this location for several reasons including:

- Simplifies the structure and drainage design.
- Less impact on the Hangman Creek drainage area.
- Less cost compared with an undercrossing.
- Less impact on traffic during construction.
- More desirable for bicycle and pedestrian traffic.

The geometric alignment developed by the Team aligned the grade separation structure with the new arterial roadway to the Eagle Ridge residential area. This would eliminate one intersection on the new north/south city arterial street. The structure could be designed to include aesthetic treatments, and landscape features could be added to enhance the appearance of the approaches to the structure.

The Team also proposed extending the new north/south city arterial street north of Meadowlane Road to connect with the existing Qualchan Drive. This would provide a vital link to the north via Qualchan Drive and Cheney-Spokane Road. The proposed new city arterial street would cross the existing land slide area immediately south of Qualchan Drive.

This area is scheduled for a repair contract to remedy the slide condition. The Team considered that this slide correction could be incorporated into the city arterial street construction through this area. Construction through this slide area will require thorough field investigation to determine the necessary stability design factors and the possible presence of water or springs in the hillside.

#### **Team Recommendation No. 2**

Provide a grade separation structure over US 195 at Meadowlane Road vicinity connecting the two residential communities and providing access to the golf course from the west side of the freeway. The cross connection would join the new north/south city arterial street on the west side of US 195 at the intersection with the planned new arterial street to the Eagle Ridge residential community.

Extend the new north/south city arterial street north to connect with Qualchan Drive. Combine the slide correction project with the proposed extension of the city arterial street through the area.

#### **Qualchan Drive**

Qualchan Drive is now a local arterial road providing connectivity between Cheney-Spokane Road and US 195. Other connecting roads provide access from Qualchan Drive to residential communities higher on the hillside. Qualchan Drive intersection has been the site of several traffic accidents including a recent fatality. The Master Plan includes the closure of Qualchan Drive and will encourage use of the access at Cheney-Spokane Road temporarily, and via the new interchange at Cheney-Spokane Road and the new north/south city arterial street in the future.

#### **Team Recommendation No. 3**

Close Qualchan Drive at the intersection with US 195 and provide the access ultimately via the Cheney-Spokane interchange in accordance with the Master Plan.

#### **Cheney-Spokane Road Interchange**

The next major arterial road intersection to the north is located at Cheney-Spokane Road on the west side of US 195 adjacent to the area zoned for commercial development. The next arterial road on the east side of the freeway is located at Inland Empire Way north of the railroad crossing.

The Team considered the feasibility of an interchange at this location to serve the access needs on both sides of the freeway. The most desirable configuration for the interchange is a "split diamond" due to the location of the Burlington Northern Railroad crossing and the separation of the two access roads. This would provide the southbound entrance and exit ramps on the west side of US 195 and the northbound exit and entrance ramps on the east side of US 195.

Placing the interchange to serve both the Cheney-Spokane Road and the Inland Empire Way would optimize the access pattern. This location is approximately 2.5 miles from the Hatch Road Interchange and 2.0 miles from the interchange with Interstate 90, providing good spacing for the access ramps and avoiding conflicts with weaving traffic.

All of the local communities and development in this area would be served by the interchange and the local arterial streets with the exception of the development identified as "Ted's Mobile Park" located on the east side of US 195 opposite the Cheney Spokane Road. At this location, the Team proposes that the access be maintained as a "right in-right out" intersection at this time.

As mentioned in the previous section, the new north/south city arterial street on the west side of the freeway would connect with Qualchan Drive utilizing the existing arterial alignment on Qualchan Drive and Cheney-Spokane Road. The portion on Qualchan Drive would be upgraded to the city arterial standards. From Cheney-Spokane Road the new city arterial street would continue to the north joining with the existing Marshall Road alignment. Marshall Road would be upgraded from this point to the intersection with Thorpe Road.

A cross connection (overcrossing) would be provided between Inland Empire Way on the east side of US 195 and the north/south city arterial street on the west side of US 195. This cross connection will complete the functional requirements of the interchange and will enhance the local circulation and connectivity. A local arterial service road would provide access to the small community on the west side, north of the Burlington Northern Railroad, identified on the plan as "Spring Creek". This service road would also connect to the north/south arterial street.

#### **Team Recommendation No. 4**

In the Master Plan provide for the central interchange to be located at Cheney-Spokane Road (south) and at Inland Empire Way (North). Develop the interchange as a split diamond configuration with a cross connection over US 195.

For the new north/south city arterial street, upgrade the portion of Qualchan Drive to city standards and utilize Cheney-Spokane Road to the connection with the new interchange. From that point, extend the city arterial street to the north to connect with Marshall Road and upgrade Marshall Road to city standards to the intersection with Thorpe Road. Provide access to the small community west of US 195 north of the Burlington Northern Railroad via a local service road connecting to the new city arterial street.

#### **Thorpe Road Intersection**

The next city arterial road intersection north of the Cheney-Spokane Road is Thorpe Road, located approximately 0.8 miles south of the I-90 interchange. This is classified by WSDOT as a "Hazardous Accident Location" within the section classified as a "Hazardous Accident Corridor". Most of the accidents are associated with traffic entering or crossing US 195 and there is also a problem with slow moving vehicles mixing with high speed traffic in a location where the traffic volume is heavy at peak hours.

At this location the Team considered that it would be unwise to provide direct access from the arterial roadway to the freeway due to the close proximity to I-90. The traffic operations and safety would be compromised considering the close proximity of the Cheney-Spokane entrance ramp and the exit ramp to I-90. The issues of city arterial circulation patterns and connectivity are important at this location.

To provide connectivity between the communities on each side of the freeway, a grade separation structure is proposed. This will provide route continuity between the existing city arterial to the west and the Inland Empire Way to the east enhancing opportunity for vehicular travel including emergency services, transit service, bicycle traffic, and pedestrian traffic.

The north/south city arterial located on the improved Marshall Road would be extended to the north to join with Lindeke Street at the intersection with 13 <sup>th</sup> Avenue. Combined with the previous sections, this would then provide a fully improved city arterial street for the full length of the project (approximately five miles) on the west side of US 195.

The master plan would also include a southbound exit ramp on US 195 at Thorpe Road if the geometric and traffic analysis determines that it is feasible. The Team briefly considered the configuration of the ramp and the potential for queuing of traffic on the ramp from the signal at the city arterial intersection. It appeared that the ramp may be feasible, depending on the traffic signal phasing and storage length available. This decision can be made after further analysis.

#### **Team Recommendation No. 5**

Provide a grade separation structure over US 195 at Thorpe Road vicinity connecting the two residential communities and providing an east-west city arterial west from Inland Empire Way. Extend the new city arterial street north from the

intersection with Marshall Road to connect with Lindeke Street at the 13<sup>th</sup> Avenue intersection. Give further consideration to providing a southbound exit ramp from US 195 at Thorpe Road if it is determined to be feasible.

#### **Inland Empire Way**

The existing Inland Empire Way serves as a north/south local collector arterial for the communities east of US 195 and north of the Burlington Northern Railroad. There is a desire to maintain the local and rural character of the highway through these areas. The Team discussed methods to enhance these features by using techniques described as "*traffic calming*".

Traffic calming is the use of various techniques to lower traffic speeds through a corridor. This may involve physical or architectural treatments, or some combination such as:

- **Speed Tables** These are like a speed bump but elongated in the direction of travel.
- **Rumble Strips** Texture the pavement so as to produce an annoying tire noise.
- Narrowing of Lanes This can be accomplished either physically, by decreasing the curb to curb width, or by painting lines or other patterns on the pavement.
- **Roundabouts** There would be smaller diameter than a normal traffic circle in order to accomplish a greater calming affect.
- A "Gateway" Treatment A portal type of treatment utilizing architectural treatments. This signals a distinct change of use of the highway.
- **Weaving** This involves the use of physical features or paint to force the traffic to weave back and forth resulting in reduced speed.
- **Angle Parking** This technique could have application in a business district.
- **Streetscape** Using trees and other landscaping treatments, including landscaped medians, to soften the surroundings and produce a more confined (less open) feeling.

Application of these techniques reduce the potential for above normal speed and also reduce the desire to utilize the route for through traffic trips.

#### **Team Recommendation No. 6**

Consider the use of traffic calming techniques on the city arterial streets, where appropriate, to reduce speed and discourage through traffic trips.

#### **Sixteenth Avenue**

Sixteenth Avenue is the first city arterial street intersection on US 195, approximately 0.20 miles south of the I-90 interchange. This location is also an area of numerous accidents and potential for increased traffic conflicts as further development occurs. The Master Plan includes the closure of this intersection when alternative access routes are completed in accordance with the interchange plan. Traffic now entering US 195 at Sixteenth Avenue would utilize the planned interchange at Cheney-Spokane Road, or would use local arterial streets in the transportation network.

#### **Team Recommendation No. 7**

Close Sixteenth Avenue at the intersection with US 195 and provide the City arterial connection between Lindeke Street and Thorpe Road in accordance with the Master Plan.

#### Preliminary Traffic Analysis of the "Master Plan"

An analysis was performed by SRTC to compare the traffic in the transportation network illustrated in the Master Plan with the "No Build" conditions. The following congested locations were found to improve: I-90; the I-90/SR 195 Interchange; mainline SR 195; Inland Empire Way to the north of Thorpe Road; 16<sup>th</sup> Avenue; westbound Thorpe Road; and westbound Qualchan Drive. The overall result of this plan is to redistribute traffic throughout the transportation network, relieving US 195 and eliminating the safety problems associated with the existing intersections.

There will be concentrations of traffic at the local intersections and at the interchanges associated with the Master Plan. These locations will require further analysis to determine the appropriate configurations and traffic control to optimize the traffic operations and safety.

#### **Construction Priority and Sequence**

Upon completion of the development of the conceptual Master Plan for the traffic access, circulation, and connectivity, the Team considered the priorities for implementing the various elements of the Plan. The objective of the Implementation Plan is to provide the improvements with the highest potential for safety benefits at the earliest phase of construction. Associated with this is the need to also provide for adequate access and circulation patterns for local traffic during the implementation phases.

The suggested priority and sequence for the Implementation Plan is shown as work items which could be constructed as a single contract, or combined as the program funding is available. The conceptual plan is as follows:

#### Activity 1, Closure of the Qualchan Drive Intersection

 The Qualchan Drive intersection can be closed with only minor work. This will eliminate a potential conflict point without significantly changing the access circulation patterns.

#### Activity 2, North US 195 Improvements (Phase 1)

- Split interchange at Cheney-Spokane Road and at Inland Empire Way.
- Connecting structure across US 195 between Inland Empire Way and a portion of the new north/south arterial street on the west side of US 195. This would provide connectivity between the two portions of the split interchange.
- Include the city arterial street between Sixteenth Avenue and Thorpe Road on the east side of US 195.
- Include the city arterial street on the west side of US 195 between Lindeke Street/Thirteenth Avenue and Thorpe Road.
- Close Sixteenth Avenue intersection with US 195.

At the completion of the Activity 2 work, the split interchange at Cheney-Spokane Road would be operational. Sixteenth Avenue intersection would be closed and Thorpe Road intersection would be restricted to right in and right out only (left turns and crossing of US 195 would be closed). Traffic from the existing community north of Sixteenth Avenue on the east side of US

195 would be connected to Thorpe Road. Efficient connection would be provided between Lindeke Street and Thorpe Road for local traffic circulation.

#### Activity 3, North US 195 Improvements (Phase 2)

- Completion of the City Street Arterial between Thorpe Road and the portion of the roadway constructed in Activity 2 connecting to Cheney Spokane Road. Improve the portion of Marshall Road that is coincident with the new city arterial roadway.
- Connecting structure on Thorpe Road over US 195 including approaches.
- Southbound exit ramp to Thorpe Road.
- Closure of Thorpe Road intersection.

At the completion of Activity 3, the improvements on the north end of the US 195 Corridor will be complete. Five of the grade intersections will be closed including Sixteenth Avenue, Thorpe Road, Inland Empire Way, Cheney-Spokane Road, and Qualchan Drive. The new interchange at Cheney-Spokane Road will be complete and the new north/south City arterial street would be complete from the north end at Lindeke Street to the end of Qualchan Drive.

#### **Activity 4, Hatch Road Interchange**

- Diamond interchange at Hatch Road including the loop ramp for SB to EB traffic.
- Close Hatch Road intersection.

Completion of this activity will provide the final interchange to be constructed in this portion of the US 195 corridor and will allow the closure of the existing at grade intersection. At this phase, the intersection at Meadowlane Road would remain open to right in and right out traffic only.

#### **Activity 5, Meadowlane Road Connection**

- Connecting structure at the Meadowlane Road vicinity over US 195.
- City arterial street (north/south) connecting Meadowlane Road on the west side of US 195 with Qualchan Drive, including reconstruction/repair of the existing landslide south of the existing Qualchan Drive intersection.
- Closure of Meadowlane Road intersection.

At the completion of Activity 5, all of the existing "at grade" intersections will have been closed between Hatch Road and I-90 with the exception of the access to Ted's Mobile Park on the east side of US 195 opposite the current Cheney-Spokane intersection. The Master Plan suggests that this small community access remain as a right in and right out intersection since alternate local access is very difficult at this location.

#### Activity 6, City Arterial Connection, Hatch Road to Meadowlane Road

• City arterial street between Hatch Road and Meadowlane Road.

This final activity will complete the Master Plan, providing the last link in the continuous north/south City arterial street system.

#### **SUMMARY AND CONCLUSIONS**

The portion of US 195 included in this Corridor Study was constructed approximately thirty years ago as a high capacity, high speed freeway facility. At that time the grade intersections were not considered to be a problem and traffic volumes were much lighter. As traffic has increased and new development has occurred, traffic conflicts and accidents have increased to the point where portions of US 195 are now classified as "High Accident Corridor" and specific intersections are classified as "High Accident Locations". The traffic analysis performed by SRTC indicates that if nothing is done, severe congestion will occur on I-90, along US 195, and at nearly every intersection and arterial road in the existing transportation network by the year 2020.

It is important in the planning for the regional transportation network that the US 195 highway corridor be maintained as a high speed, high volume freeway in accordance with the intent of the National Defense Highway System. It is essential that the freeway system be retained to provide efficient mobility for intrastate and interstate commerce and to serve as the primary transportation artery to the local City arterial street system.

This US 195 Corridor Safety Study is intended to provide the basis for a viable Master Plan to assist in the identification of safety improvements throughout the corridor. The installation of limited access interchanges at strategic locations is considered to be essential to the overall traffic capacity and safety. Closure of the existing access points at the problem intersections will in some locations require the construction of additional City arterial streets to provide for local traffic circulation and neighborhood connectivity. The VE Team comprised of representatives from many jurisdictions and interests has developed the Master Plan after carefully considering the various functional requirements of the transportation network.

The Master Plan will provide for two new interchanges, spaced to preserve the integrity and operational characteristics of both I-90 and US 195. A significant City arterial street is included to provide local access throughout the entire corridor in a north/south direction parallel to US 195. Other arterial street connections are included to provide access to small communities or neighborhoods as necessary. Four structures are included in the plan to provide for connectivity across US 195 at strategic locations aligned with the local street network.

The traffic analysis performed by SRTC for the Master Plan transportation network indicated that significant improvement will be achieved on I-90, US 195, and on major local arterial streets within the network. Traffic concentrations will occur at the city arterial road intersections and at the new interchanges. The configuration and traffic control design at these locations can be optimized during the design process.

The Team also considered the implementation of the Master Plan in a logical sequence to achieve the safety and operational benefits in priority order. The construction of the Master Plan elements will commence with the construction of the Cheney-Spokane Interchange and the improvements near the north end of the corridor. Other Master Plan

elements to the south will be implemented as the needs develop, and programming and funding allow.

Considering the large amount of growth now underway and projected along the corridor during the next several years, the Team felt that it is essential to reach agreement on the Master Plan through the normal planning and public processes as soon as possible. This step is critical to the beginning of project development activities leading to the construction of the various elements of the plan.

Since the issues along the corridor involve many stakeholders and jurisdictions, it may be possible to seek other funding sources and project development processes. These may include the State Department of Transportation, Transportation Improvement Board, City of Spokane, Spokane County, and Developer participation.

The VE Team expresses appreciation to the Eastern Region staff, and design team for the excellent support given during the VE Study, and for the hospitality shown to the Team members. Hopefully the work of the Team will provide the basis for the development of the Master Plan for this important portion of US 195, and will assist in the management decisions regarding the final implementation of the needed improvements.

Respectfully Submitted, Value Engineering Team Clyde L. Slemmer P.E., CVS Team Leader

# VALUE ENGINEERING STUDY WORKBOOK and ATTACHMENTS

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## VALUE ENGINEERING STUDY

STUDY IDENTIFICATION NUMBER

JANUARY 4-8, 1999 DATE

PROJECT NAME: US 195 CORRIDOR SAPETY STUDY.

HIGHWAY ROUTE: US 195 PROJECT TERMINI 1-90 TO HATCH ROAD.

PROJECT DESCRIPTION: THE US 195 CORRIDOR SOUTH OF 1-90 HAS BEEN CLASSIFIED AS A HAZARDOUS ACCIDENT CORRIDOR. WITHIN THE CORRIDOR ARE HAZARDOUS ACCIDENT LOCATIONS AT NEY INTERSECTIONS. THIS STUDY WILL CONSIDER THE SAFETY IMPROVEMENTS NECESSARY TO ADDRESS THE TRAFFIC CONSESTION, CONFLICTS, AND ACCIDENT LOCATIONS.

TWO NEW INTERCHANGES ARE PROPOSED, AND CLOSURE OF SOME OF THE INTERCHANGES WILL BE NECESSARY, ARTERIAL STREET IMPROVEMENTS MAY BE NECESSARY, WITH THE PUSSIBILITY OF HODITIONAL CITY HETERIALS OR FRONTRIEF ROADS.

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# SR 195 VE Study Constraints

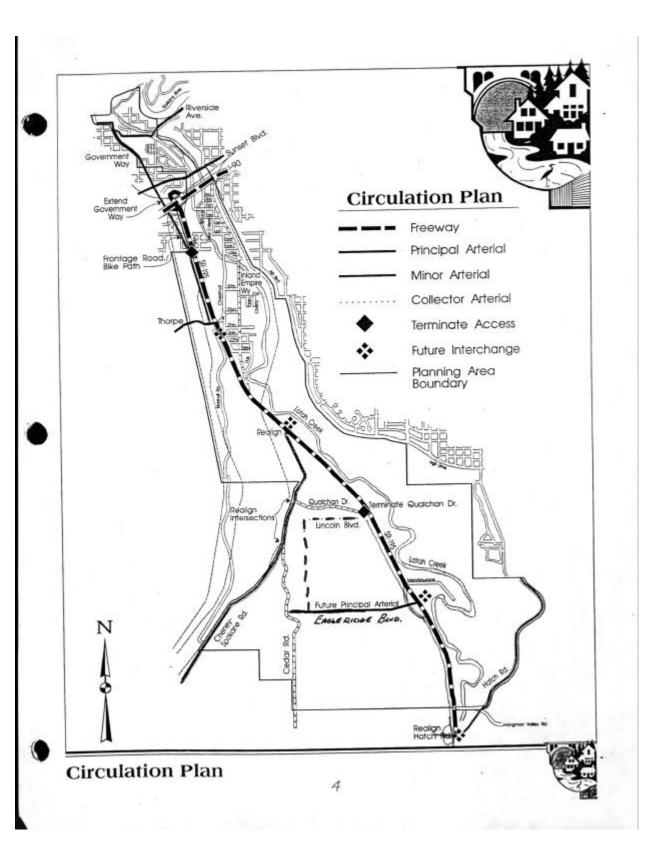
 No Traffic Signals- SR 195 is part of the National Highway System and has a significant role in inter-city and interstate movement of people and goods. In addition traffic signals tend to modify the type of accidents happening in an area, not reduce them. Traffic signals also tend to lower average speeds on a facility and that in turn tends to increase carbon monoxide emission rates.

SR 195 is a primary north-south highway providing the most direct route to and from Spokane for rural and urban areas south of Spokane in eastern Washington.

- 2. **No reduced speeds on SR 195** This section of 4 lane, median divided highway was designed to carry traffic at 70 mph. Driver perception is therefore to drive this facility at a highway speeds. While increased enforcement could help to keep speeds lowered, as soon as the enforcement was gone speeds would tend to increase again to what is expected. Also with the lower average speeds an increase in carbon monoxide emission rates could be expected.
- 3. **Focus on Safety Improvements on the 195 corridor** This study's primary purpose is the improvement of safety along the SR 195 corridor from Hatch Rd to SR 90. Improvements at SR 90, which may improve mobility, do little for the safety issues on SR 195 and could be addressed in a later study.
- 4. The preferred alternative should have a maximum of 2 interchanges with connecting frontage roads where required. Topographic features, potential environmental impacts, and socioeconomic factors severely limit the available options to improve this section of highway. An interchange will typically cost in excess of 10 million dollars with the associated frontage roads averaging about 1 million dollars per mile. It is felt that present government resources cannot economically support anything more than this.

Design standards also recommend that interchanges be spaced no closer than 2 miles apart. With a study area of 5 miles and an existing interchange at SR 90 this standard would limit the study to 2 additional interchanges.

5. **Maintain connections for areas south and west of Inland Empire Way** - SR 195 is the only arterial for neighborhoods in this area. As such, some sort of connection needs to be maintained for these areas. In addition, routes should provide for local traffic via frontage roads or grade separations from SR 195 to move within and through the local community.





#### SPOKANE REGIONAL TRANSPORTATION COUNCIL

808 W. Spokane Falls Blvd ● Spokane, WA 99201-3337 ● 509/625-6370 ● FAX 625-6988

#### MEMORANDUM

To: Clyde Slemmer

From: Kelly McGourty, Transportation Planner

Date: January 8, 1999

RE: SR 195 Corridor Value Engineering Study

Modeling Results

This memo serves as a brief overview of the final modeling performed for the SR 195 Corridor Value Engineering Study.

SRTC uses TModel2 (TM2), a land use based travel demand model, for PM peak hour traffic analysis. The model is comprised of transportation analysis zones (TAZs) organized within a network of links (street segments) and nodes (intersections). Each TAZ contains housing and employment data, which the model uses to generate and distribute trips over the network. Trips enter and exit the network through various loading points in each TAZ. TM2 is used to evaluate impacts to the transportation system from changes in roadways and/or land use.

The analyses conducted for this study were done for the forecast year 2020. SRTC's forecast land use files include existing, approved, and proposed residential and commercial developments in the study area. In addition, the assumptions used to create these forecast files were made consistent with the Growth Management Act, forecast population allocations, and the Interim Urban Growth Areas as adopted by Spokane County.

Based on the results of the model, in the No Build, or Base Conditions, scenario, the following locations become congested by the forecast year 2020: I-90; the I-90/SR 195 interchange; southbound SR 195 and nearly all of the intersections along SR 195; southbound Inland Empire Way and its intersections; 16th Avenue and its intersections; westbound Thorpe and its intersections; southbound Cheney-Spokane and its intersections; westbound Qualchan and its intersections; westbound Meadowlane to Eagle Ridge; and Hatch Road and its intersections. In other words, nearly every road in the corridor experiences congestion in the No Build conditions by the forecast year 2020.

The alternative which was chosen as the "Preferred Alternative" for the corridor by the Value Engineering Team includes the following improvements: no access to SR 195 from 16th Avenue; a frontage road parallel to SR 195 on the west from 16th Avenue to Cheney-Spokane; a crossover of SR 195 at Thorpe; a split interchange with the northbound ramps near Inland Empire Way and the southbound ramps near Cheney-Spokane, with a crossover of SR 195 connecting the two; no access to SR 195 from Qualchan; a frontage road from Qualchan to Hatch running parallel to SR 195 on the west; a crossover of SR 195 at Meadowlane; and a full interchange at Hatch.

Comparing the results of this alternative network with the No Build conditions, the following congested locations were found to improve over base conditions: mainline I-90; the I-90/SR 195 interchange; mainline SR 195; due to the removal of all at-grade intersections along SR 195, no congestion is found at these locations; Inland Empire Way to the north of Thorpe; 16th Avenue; westbound Thorpe; and westbound Qualchan. The overall result of this alternative network is to redistribute traffic away from SR 195 and to eliminate the safety problem created by turning movements at the at-grade intersections. Due to this, some areas become congested with this alternative network, particularly those areas containing new facilities such as the frontage roads or the new interchanges to SR 195. However, certain assumptions were made on the new facilities in terms of intersection control, capacity, speed, etc. in order to run the model. By adjusting these assumptions as needed, for example changing an intersection from a stop control to a signal,

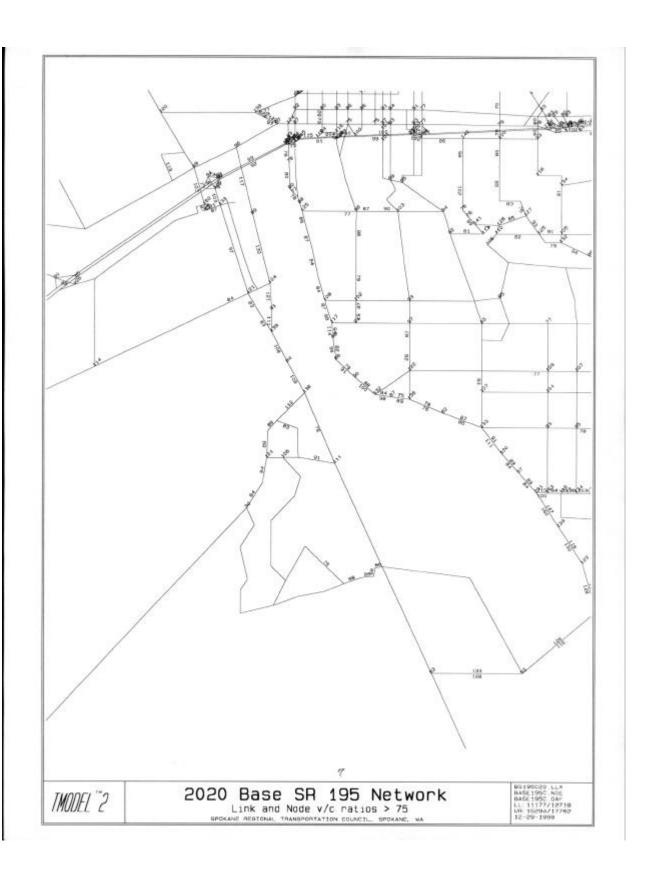
some of this projected congestion may be alleviated. These decisions will be more accurately made during the actual design of these new facilities.

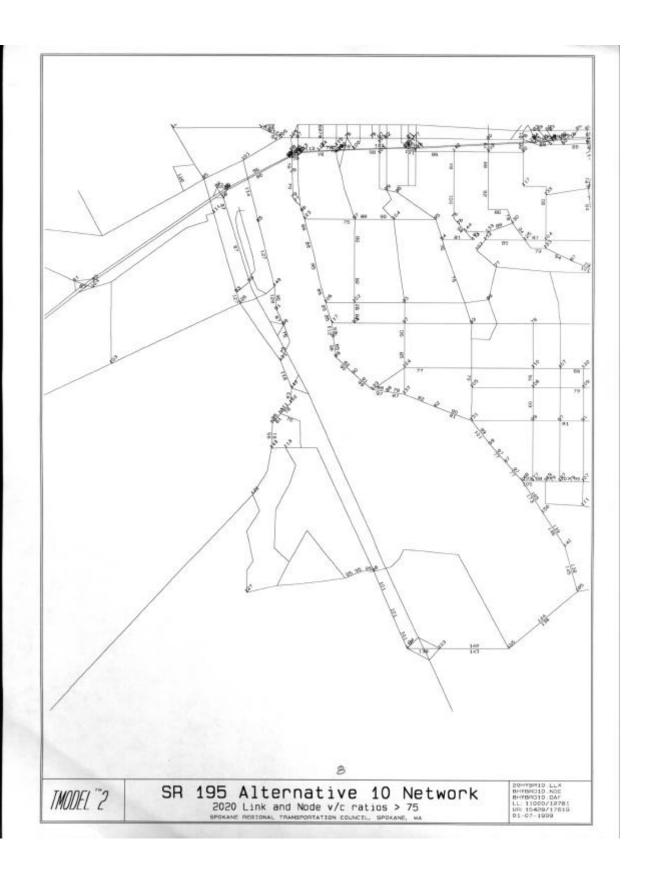
In the No Build, or Base Conditions, scenario, by 2020 the following locations are congested (i.e. having a volume to capacity [v/c] ratio of 0.75 or higher):

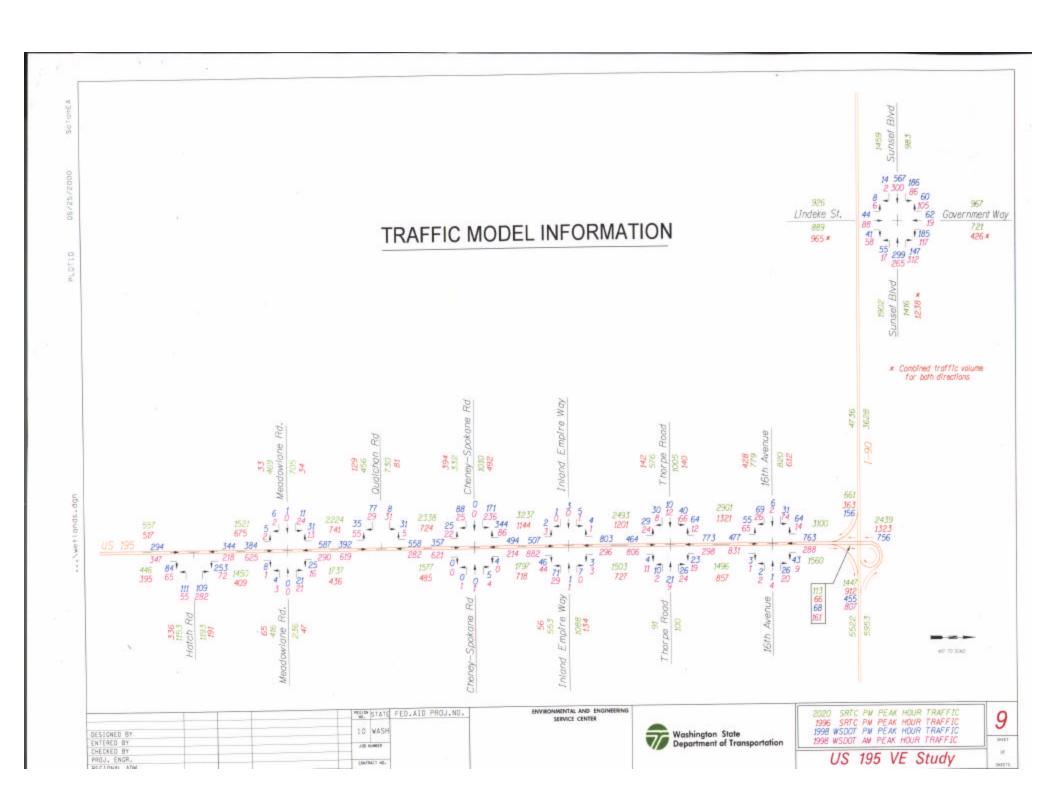
- I-90: mainline I-90 in both directions east of SR 195
- I-90/SR 195 interchange: westbound off ramp; eastbound onramp; both ramp terminals; and the intersection of I-90 with the eastbound onramp and the westbound off ramp
- SR 195: southbound from I-90 to Qualchan; and the intersection of SR 195 with 16th, Thorpe, Inland Empire Way, Cheney-Spokane, Qualchan, and Hatch
- Inland Empire Way: southbound from Sunset to SR 195; and the intersection of Inland Empire Way with Sunset, Thorpe, and SR 195
- 16th Avenue: both directions west of SR 195; and the intersection of 16th with SR 195
- Lindeke: southbound from Sunset; and the intersection with 14th
- Thorpe: westbound from SR 195; and the intersection of Thorpe with Inland Empire Way, SR 195 and Assembly
- Cheney-Spokane: southbound from SR 195 to Cedar; and the intersection of Cheney-Spokane with SR 195, Qualchan, and Cedar
- Qualchan: westbound from SR 195; and the intersection of Qualchan with SR 195, Lincoln, and Cheney-Spokane
- Meadowlane: westbound from SR 195 to Eagle Ridge
- Hatch: both directions east of SR 195; and the intersection of Hatch with SR 195

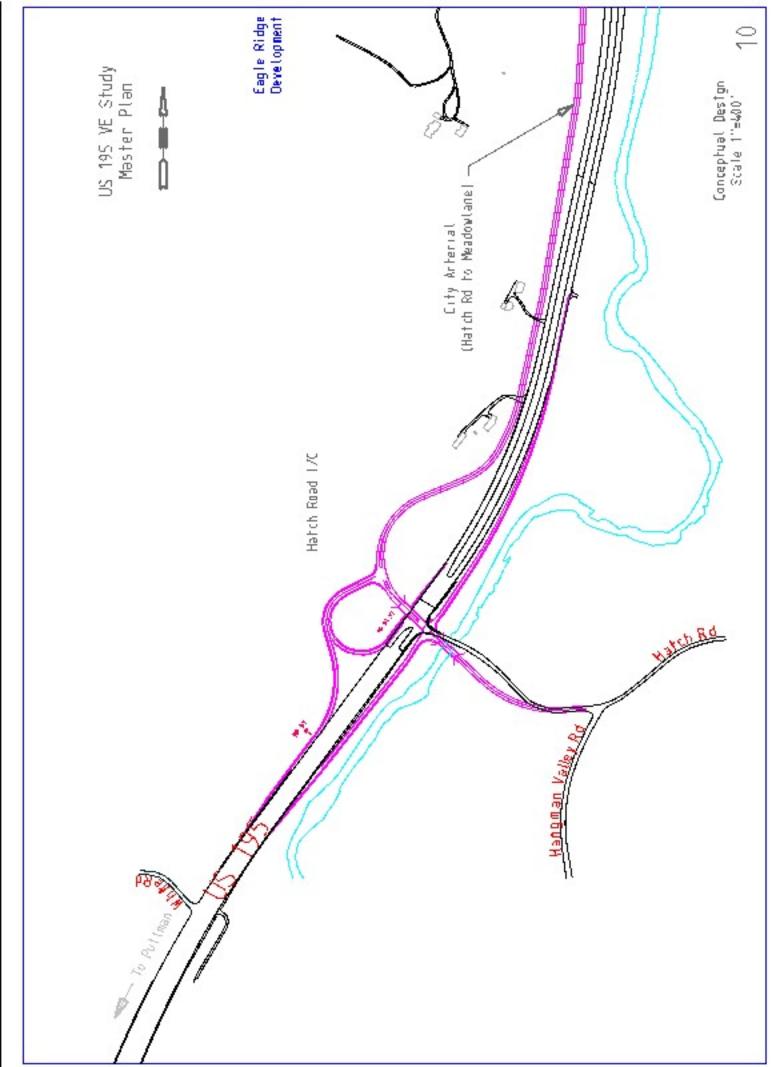
In the "Preferred Alternative" chosen by the Value Engineering Team, by the forecast year 2020 the following comparisons to the No Build scenario are noted:

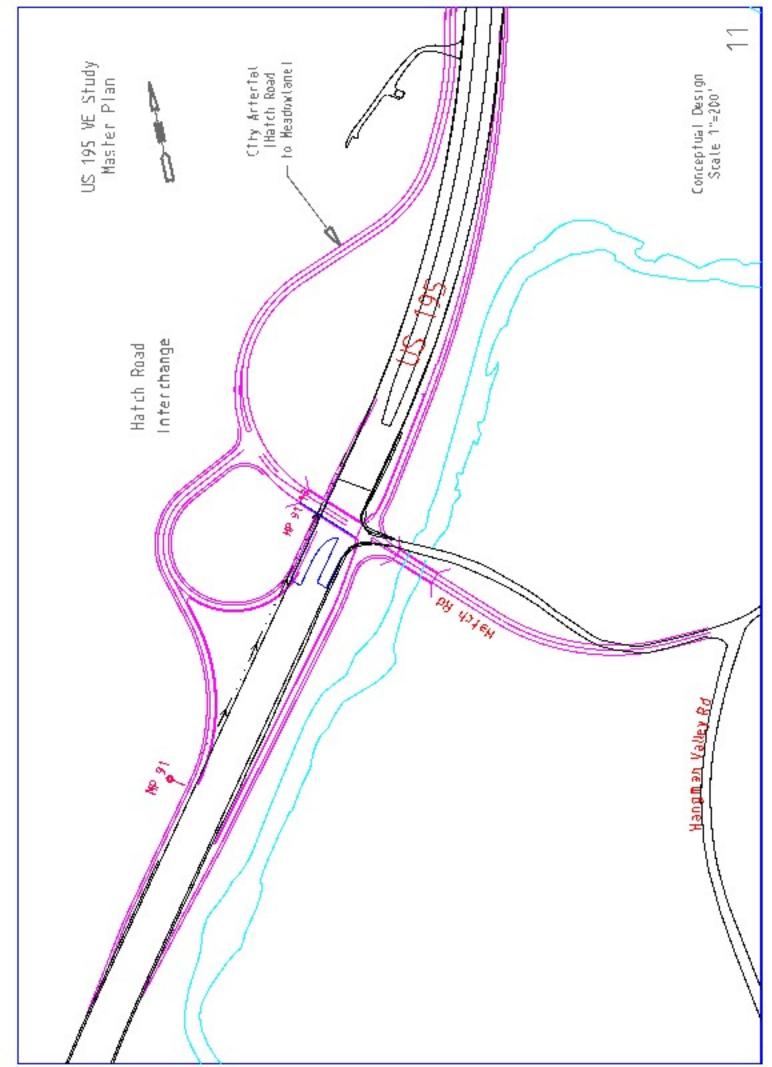
- I-90: congestion on mainline I-90 in both directions east of SR 195 improved over base conditions
- I-90/SR 195 interchange: all congested points improved over base conditions
- SR 195: southbound SR 195 congestion improved over base conditions; all at-grade intersections removed, therefore no congestion at these locations
- Inland Empire Way: southbound Inland Empire Way congestion improved over base conditions from Sunset to Thorpe; south of Thorpe, congestion worsened in certain areas due to new connection to northbound on and off ramps to SR 195; the intersection of Inland Empire Way with Sunset and with Thorpe is worsened over base conditions; the intersection of Inland Empire Way with SR 195 is removed
- 16th Avenue: all congestion points improved over base conditions
- Lindeke: all congestion points improved over base conditions
- Thorpe: westbound from SR 195 improved over base conditions; the intersection of Thorpe with Inland
  Empire Way is worsened due to the new connection to and from northbound SR 195; the intersection of
  Thorpe with SR 195 is removed; and the intersection of Thorpe with Assembly is improved over base
  conditions
- Cheney-Spokane: southbound Cheney-Spokane is in certain locations improved and in others worsened; northbound Cheney-Spokane becomes congested with the alternative due to the new connection to a split interchange at SR 195; the intersection of Cheney-Spokane with SR 195 is removed; the intersection of Cheney-Spokane with Qualchan and Cedar is worsened
- Qualchan: westbound from SR 195 is improved over base conditions; the intersection of Qualchan with SR
   195 is removed; the intersection of Qualchan with Lincoln and with Cheney-Spokane is worsened
- Meadowlane: westbound from SR 195 to Eagle Ridge is worsened over base conditions
- Hatch: both directions east of SR 195 are worsened over base conditions; the intersection of Hatch with SR 195 is removed
- Frontage roads: various points along the frontage roads become congested with this alternative

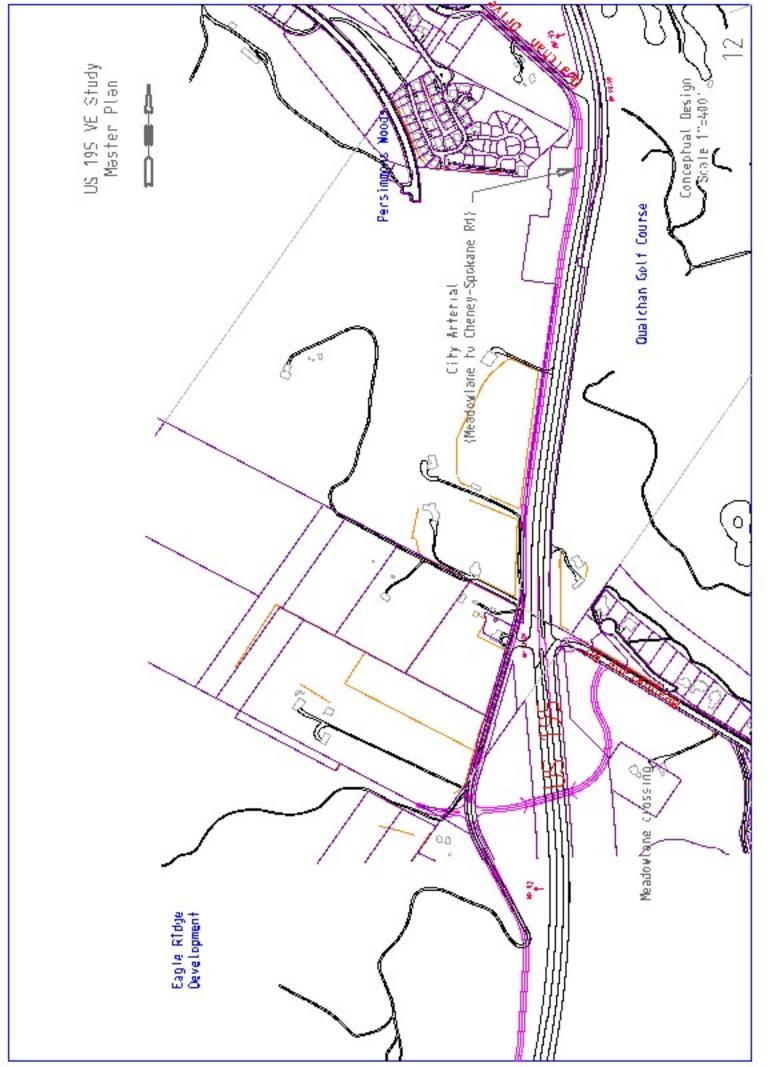


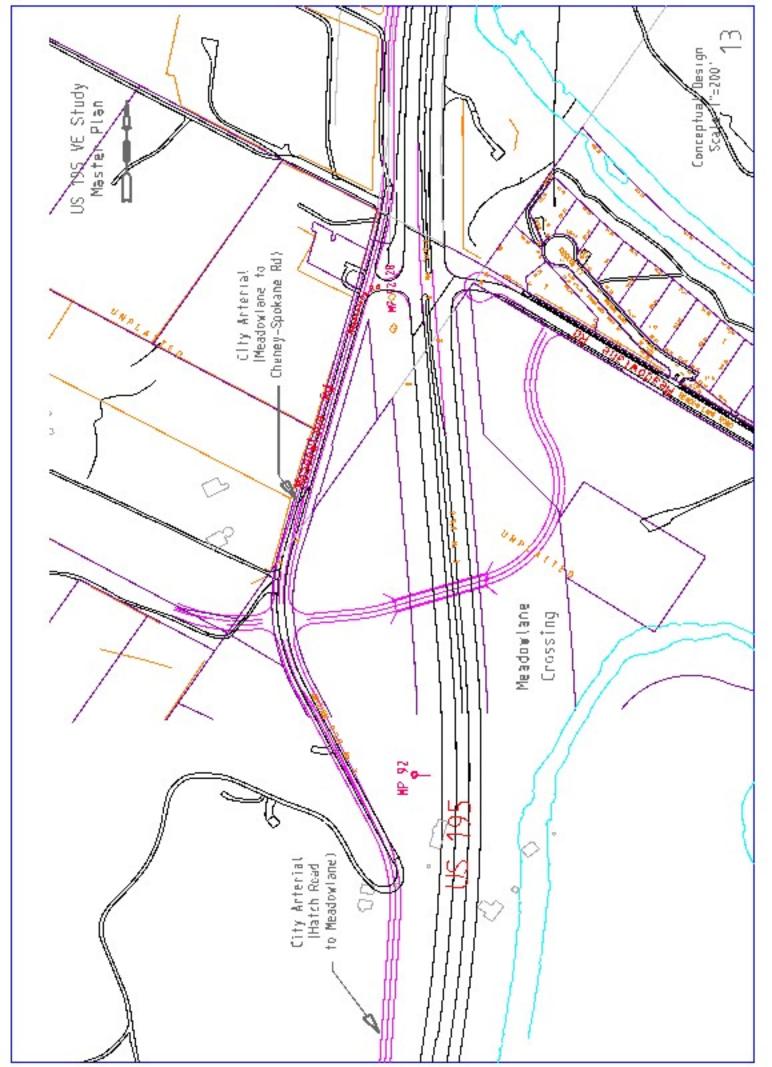


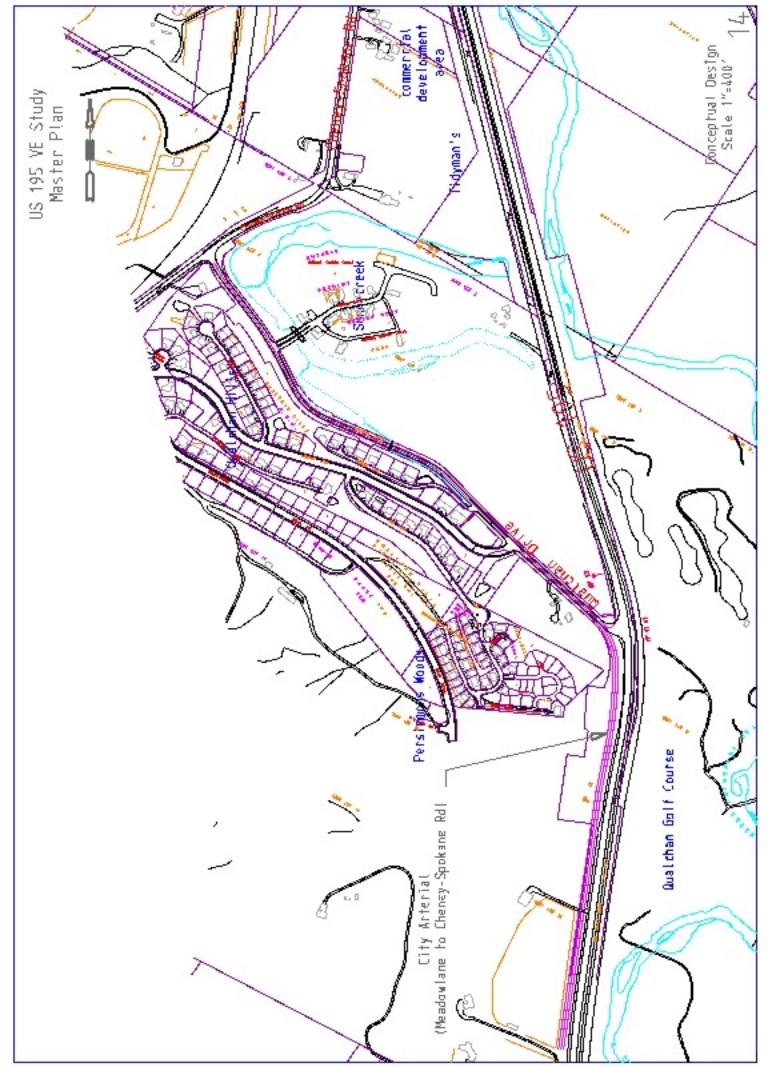


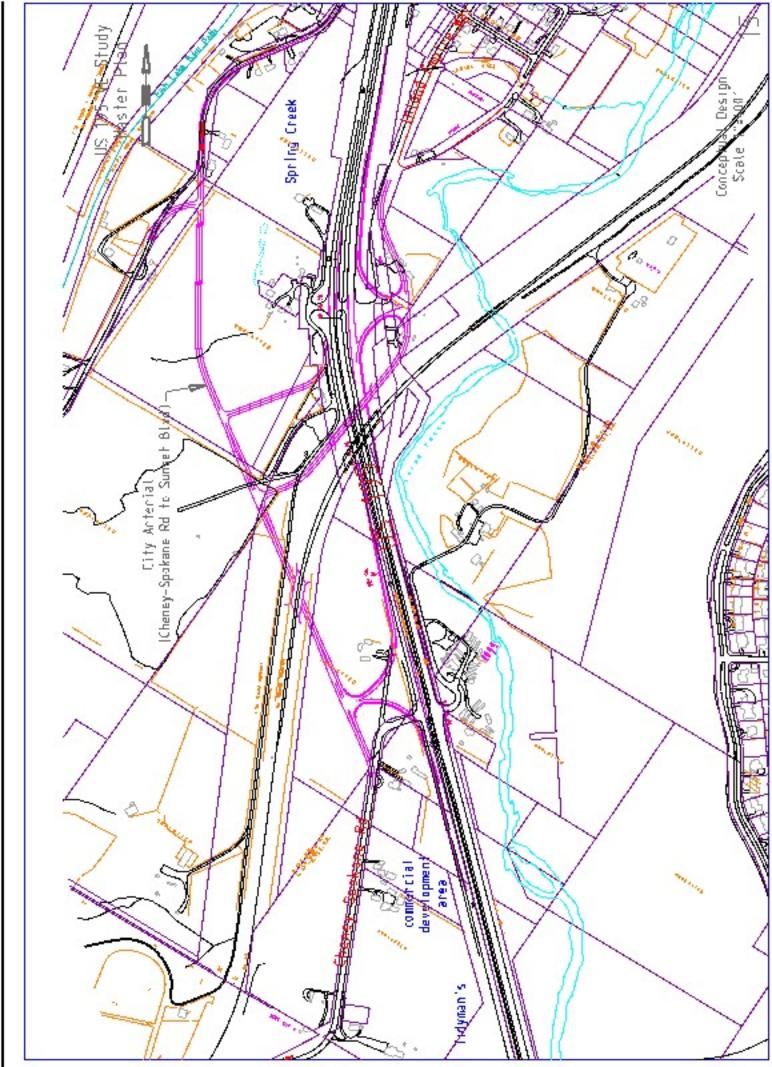


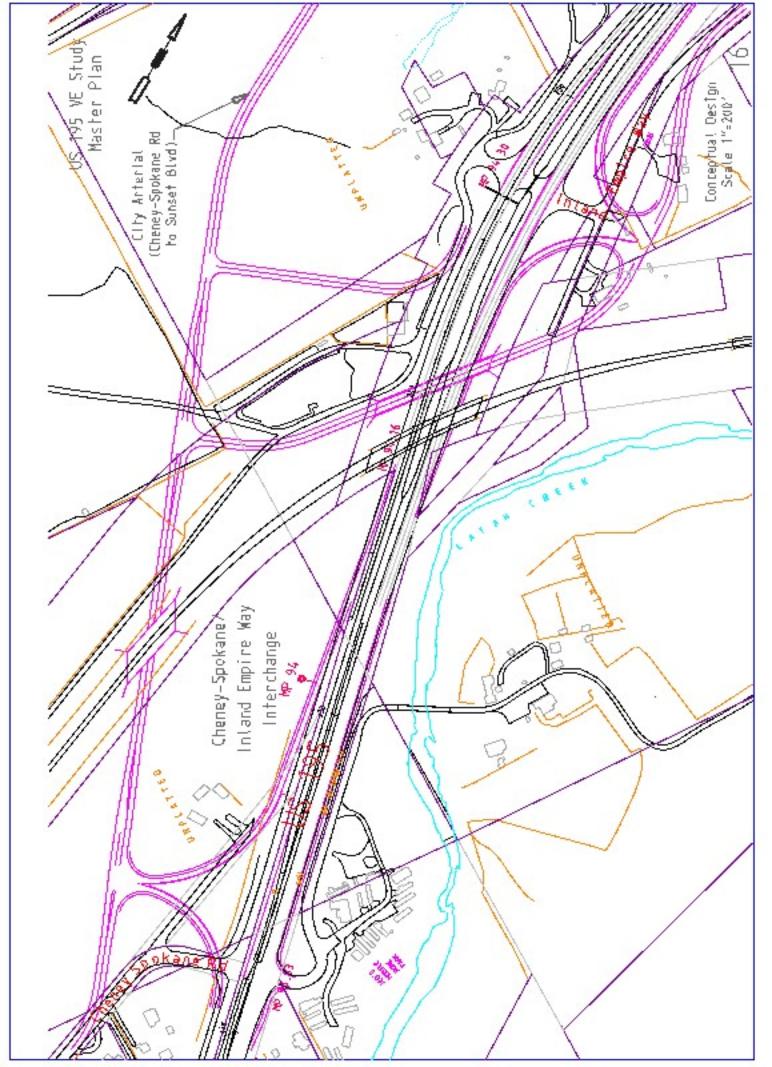


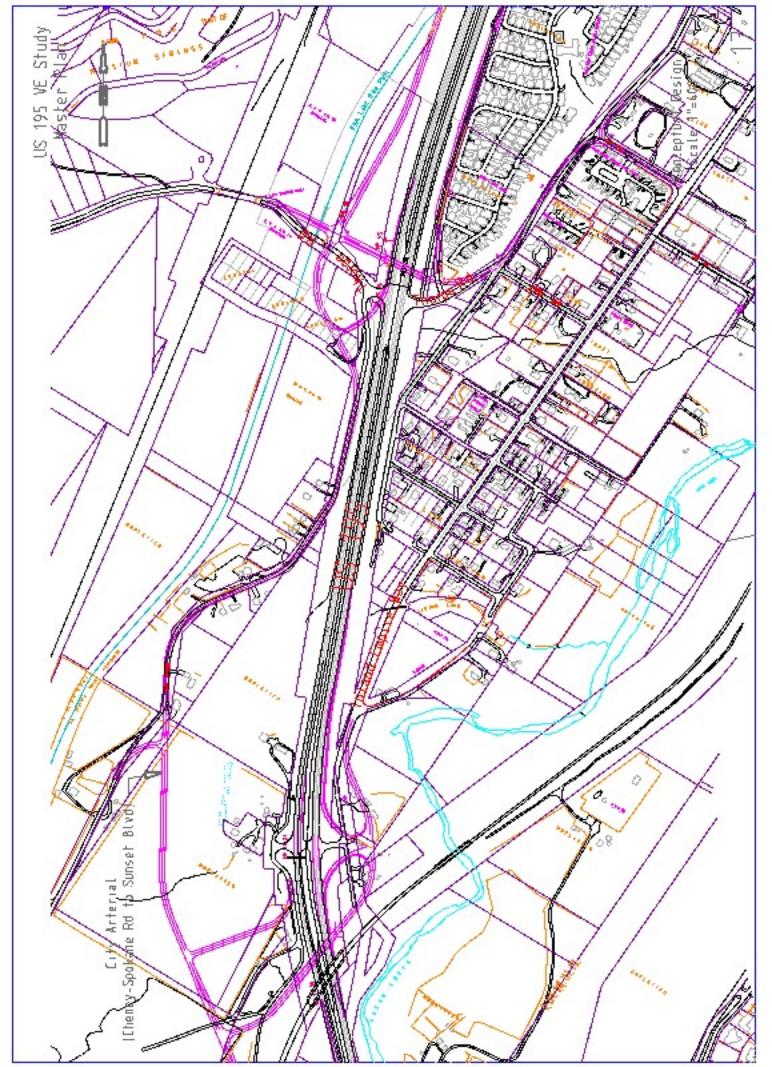




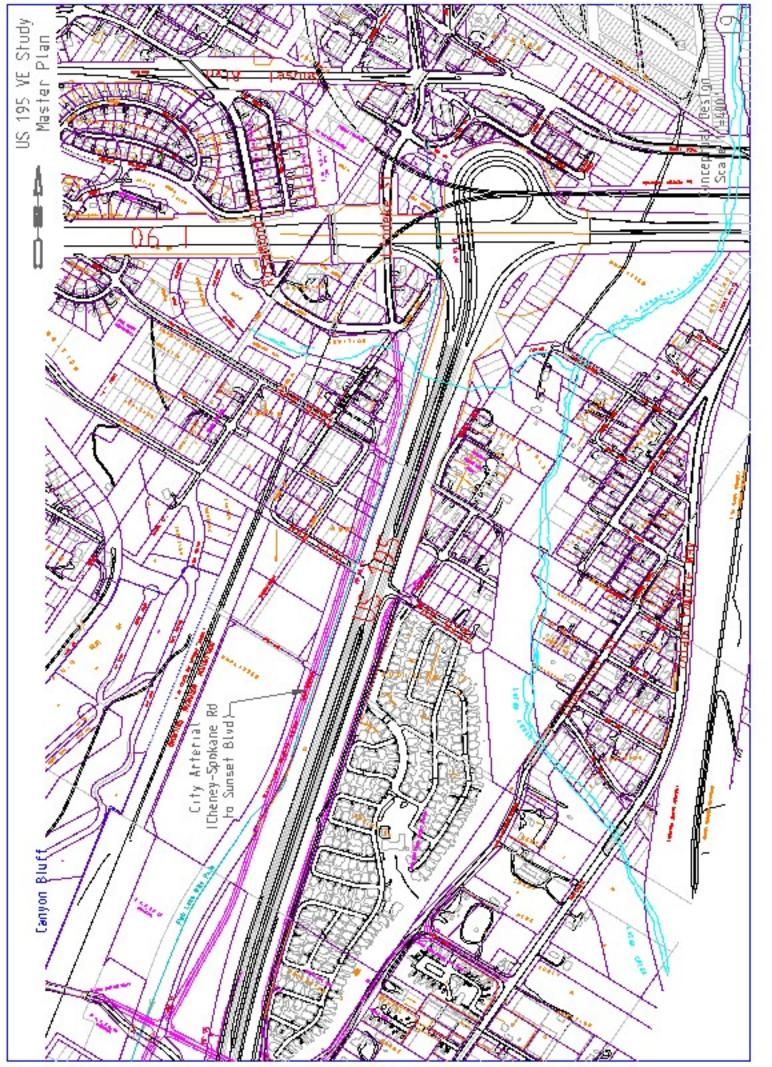












# VE Study SR 195

(Hatch Road to Cheney-Spokane Interchange)

January 4-8, 1999 Notes:

Descriptions and alternatives are discussed starting at Hatch Road intersection and continuing northbound on SR 195.

# **Hatch Road Interchange**

**Advantages** and reasons for improving the Hatch Road Intersection at MP 91.17:

- Hatch road is the only connector from south Spokane to SR 195 southbound.
- Hatch road carries high volumes of traffic.
- Hatch road is a minor arterial and a regional connector.
- The existing bridge on Hatch road immediately east of the intersection is nearing life expectancy and needs to be replaced.
- This road is a heavily used bicycle route.
- Hatch road intersection is the site of many collision accidents resulting from left-turn movements on and off of SR 195. Fatalities have occurred at this intersection. A grade separation will eliminate these types of collision accidents and solve an existing safety problem.

#### **Disadvantages** associated with changing the Hatch Road intersection:

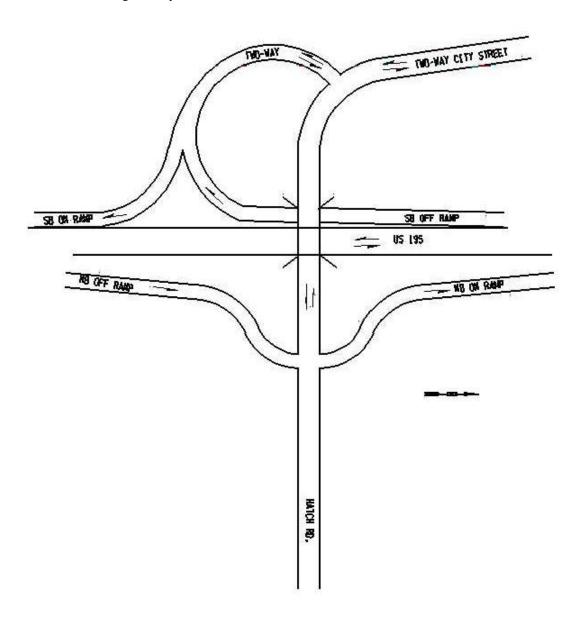
- The topography on the west side of SR 195 is steep and possibly contains a substantial quantity of basalt rock.
- There is no connection to Hatch Road coming from the west at this time.
- Environmental issues include but are not necessarily limited to effects on Hangman Creek (potential for contamination during construction), impacts to the Hangman Creek floodplain, such as filling, wetland impacts, both long and short term, from construction of approach fills, and riparian impacts associated with the loss of trees, shrubs and other vegetation found within the footprint of the new alignment.
- Negative aesthetic impacts may result from the construction of large cuts and fills required to meet the geometric needs of a grade separation at SR 195 and a new bridge over Hangman Creek.
- Highway runoff and stormwater will need to be treated before entering Hangman Creek.

# **Hatch Rd** Design Considerations

Tight radii on E side to avoid Cr. impacts.

NB (on/off) larger radii and longer storage area at end of city street before crossing 195 to accommodate left turns.

Partial clover addresses two-way city street and allows existing freeway SB @ Hatch.



## Design considerations for a new Hatch Road Interchange

A partial clover-leaf configuration was chosen after considering the tight radii required to avoid impacts to Hangman Creek on the east side of the new structure. The new bridge structure will be located south of the existing intersection to allow traffic to use the existing bridge and at-grade intersection on SR 195 during construction. Relocating the bridge over Hangman Creek will also address geometric improvements to Hatch Road to the east.

Hatch Road will be elevated prior to crossing Hangman Creek and this elevation will be maintained to bridge both north and south bound lanes of SR 195. The bridge over SR 195 could be used as a portal to the city of Spokane because it will be the first structure encountered upon entering the city limits of Spokane. Hatch Road will then continue as a

new street north toward Spokane on the west side of SR 195.

A two-way ramp will provide access to the southbound lanes of SR 195 and also carry southbound exiting traffic from SR 195 to Hatch Road and the new city street. Northbound on and off ramps will be constructed utilizing MSE walls where appropriate to avoid impacts to Hangman Creek.

## **City Street (Hatch Road to Meadowlane Intersection)**

Advantages to building a two-way city street as a continuation of Hatch Road on the west side of SR 195:

This would be similar to a frontage road but would have shoulders wide enough to accommodate a bicycle lane. This road will continue north and eventually connect, via other county and city streets, to the 1-90 corridor at the north end of the study area.

- This route will provide much needed connectivity to other roads and developments along the SR 195 corridor.
- This street will provide mobility for residents without using SR 195.
   SR 195 is a limited access highway with a posted speed limit of 55MPH.
- It will provide emergency vehicle access to residents along SR 195.
- It can provide a detour route in the event of accidents on SR 195.
- It will provide school and transit bus routes along the SR 195 corridor without resorting to travel on the limited access highway.
- Route continuity will be maintained on Hatch road across the SR 195 corridor and down the Hangman Creek valley toward the commercial development at the Cheney-Spokane Road Interchange.

#### **Disadvantages** to a city street along SR 195:

- Costs associated with the new street include snow removal and routine maintenance of the facility.
- An additional strip of land will be covered with an impervious surface requiring measures to treat highway runoff from storm events.

#### **Meadowlane Intersection**

#### Advantages to constructing a Meadowlane Intersection:

- This intersection would serve a future city principle arterial from the Eagle Ridge Development.
- It will connect Qualchan Hills Golf Course and Meadowlane to the new city street.
- This intersection will remove local traffic from SR 195.
- There is a potential for developer assisted funding for this intersection.
- It will eliminate at-grade turning movements and address a safety problem.

#### Disadvantages to constructing a Meadowlane Intersection:

- Greater traffic impacts to local neighborhoods will occur.
- Environmental impacts to Hangman Creek floodplain may occur.
- Shoreline issues must be addressed if construction occurs near Hangman Creek.
- Visual aesthetic impacts will result if a raised structure is built.
- This intersection would serve mainly a local population (Meadowlane) instead of a regional base.
- This intersection would be in close proximity to the Cheney-Spokane Road Interchange yet to be constructed.
- Without a new Hatch Road interchange, southbound traffic from Hatch Road must go out-of-direction to go to Pullman, Colfax, and points south.

# Meadowlane Overcrossing Vs Undercrossing

# Overcrossing

#### **Advantages:**

- This type of crossing is generally less expensive than an undercrossing
- Bicyclists seem to prefer this type of crossing.
- A bridge will eliminate a dangerous at-grade intersection.
- There is a potential for developer participation.
- The structure could be utilized as a "Portal" to the city of Spokane.
- Use of an overcrossing, eliminates the need for one intersection.

#### **Disadvantages:**

- A more circuitous route results for residents of Bridlewood and Qualchan Hills Golf Course.
- A bridge may not be aesthetically pleasing in this corridor.
- This configuration requires a larger footprint due to elevated ramps.

## Undercrossing

#### **Advantages:**

- This type of intersection would be less obtrusive aesthetically.
- This structure would eliminate an at-grade intersection on SR 195.
- A smaller footprint would be required.

#### Disadvantages:

- Undercrossings are generally more expensive than above ground structures.
- Drainage becomes a consideration that can be expensive to fix at the bottom of the undercrossing below SR 195.
- It requires an additional intersection versus the overcrossing option

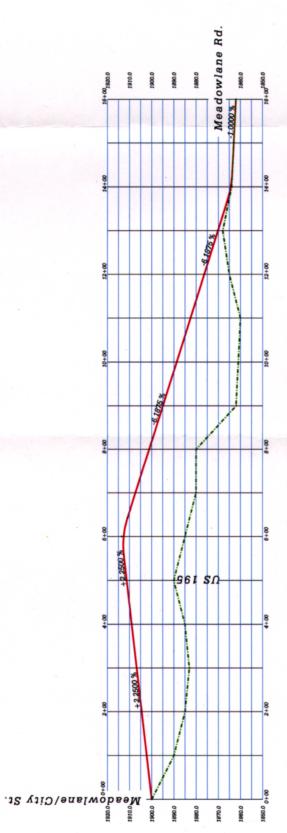
# City street from Meadowlane to Qualchan Road

### Advantages:

- This new street will improve local access to homes in the area
- It removes local traffic from SR 195
- It provides an alternate route in case of accidents or the need for a detour for any reason on SR 195.

#### Disadvantages:

- The new street will increase traffic in front of existing homes.
- Additional impervious surface will contribute to stormwater and runoff problems.
- Additional right of way will be required to construct the street.



Meadowlane Road Undercrossing

This roadway profile illustrates the feasibility of constructing a City arterial connecting Meadowlane Road over US 195 to connect with the proposed city arterial street on the west side of US 195.

## Qualchan Road Intersection Closure at MP 92.93

#### Advantages:

- Closing this intersection meets the Latah Creek Specific Plan.
- Closing it eliminates a dangerous at-grade intersection on SR 195.
- Greater mobility is provided by connecting Qualchan Road with two new city arterials.
- Existing streets are utilized under this proposal.
- With this new configuration, there will be a new street access to Cheney-Spokane Road.

#### Disadvantages:

- This will increase residential traffic in the vicinity of a future school site.
- Improvement of Cheney-Spokane Road and the existing Qualchan Road is required resulting in possible wetland impacts and associated mitigation costs.

# City Street from Qualchan Road to Cheney-Spokane Road adjacent to SB lanes of SR 195

#### Advantages:

- This option avoids wetland impacts at the Cheney-Spokane and Qualchan Road intersection.
- It agrees with the Latah Creek Specific Plan.
- There is less right of way required for this option.

#### Disadvantages:

- There will be slight wetland impacts along SR 195 near the Spring Creek Development.
- There is a potential for local residents to ask for an approach from the Spring Creek Development.
- Additional impervious surface will be created requiring measures to treat stormwater and highway runoff.

# Diamond Interchange with Texas Style Frontage Road at Hatch Road Interchange

#### Advantages:

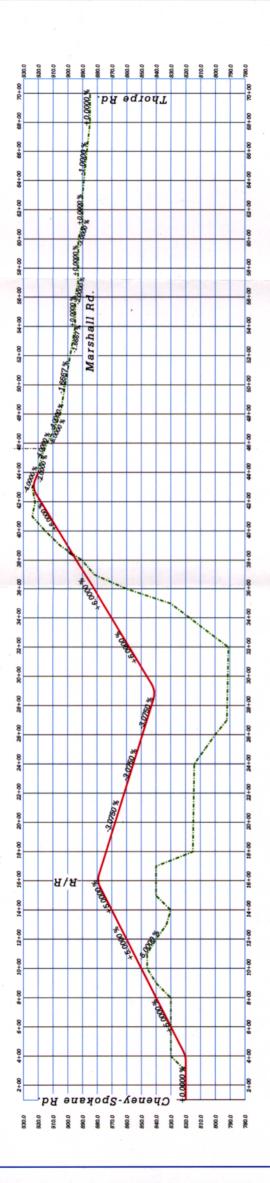
- A diamond interchange would result in a smaller footprint at Hatch Road.
- Less right of way would be required.
- It may be less expensive than other options.

#### Disadvantages:

- This option requires more out-of direction travel for some traffic movements.
- It requires intersections with potential conflicts as opposed to continuous flow traffic.
- It will require additional structures to accommodate the NB frontage road and may impact Hangman Creek.
- It will require two lanes NB with a gore area near the Hatch Road Interchange.
- There will be speed differentials at merge points that must be considered.

This option was dropped because of concerns about traffic movement and driver expectations. This type of system is new to this area and would break up the continuity of Hatch Road where it becomes the new city street.

The group considered it important to maintain a smooth uninterrupted (outside of normal intersections) flow of traffic on the city street from Hatch Road to 1-90.



City Street

Thorpe Rd. to Cheney-Spokane Rd.

West of SR195

Railroad Overcrossing

This roadway profile illustrates the feasibility of constructing a City arterial connecting Meadowlane Road over US 195 to connect with the proposed city arterial street on the west side of US 195.

#### DESIGN ALTERNATIVE SELECTED FOR EVALUATION

### : Thorpe Overcrossing

#### SKETCH AND DESCRIPTION

1904 finished bridge grade 1820 @ Chestnut &  $20^{th} = 84/(1400-200 \text{ for VC}) < 8\% \text{ OK}$  may need bike separation on RR grade  $80^t \times 12^t \times \$100 = \$100k$  8% max. city grade unless deviation is applied for. Use existing Thorpe alignment to touchdown @ Chestnut &  $20^{th}$  (no driveway impacts) I/S with Cascade frontage using existing horizontal alignment

#### WORKS ONLY FOR NO NB ON-RAMP

See Duane's alignment if NB ramp is used - requires 4 lane bridge, breaks frontage road continuity, difficult ramp construction

Cons Pros

Ramp too expensive
Quickly fail capacity
Intersections too close (weaving)
300' separations between intersection
4-lane bridge - retaining wall
Restricts local options

Quicker access
Splits local traffic

#### Southbound off ramp

Study traffic figures to ensure benefits out weigh safety fire response time

Con - close to I-90 Interchange (weaving)
move to south of Thorpe - allows right on frontage & ability to manage
left turn @ signal - also better management of queue backup to SR195 &
better length weave from I-90

# **EVALUATION PHASE (continued)**

## IDEA ADVANTAGES DISADVANTAGES

Northbound onramp at Thorpe Interchange Quicker access to SR195 for Thorpe 16<sup>th</sup>, & Cascade traffic

Reduces travel time

Introduces merge and crossing conflicts near I-90

Difficult merge for westbound I-90 traffic

Significant R/W impact to Latah neighborhood

25 MPH loop ramp is not ideal

Poor local street operations in onramp vicinity

Conflicts with Latah Creek neighborhood plan

# Hatch Road to 1-90

## T&E and Wetland Issues

# Wetland Impacts:

Construction at Thorpe Road on SR 195 will impact wetlands that occur in the south quadrants of the proposed foot print. This wetland is less than 1/2 acre in size. It consists of a riparian corridor that is bisected by SR 195. There is a live stream running through this section with trees, shrubs and other riparian vegetation associated with it.

Any improvements to the intersection at Cheney-Spokane and Qualchan Roads will have the potential to impact a wetland. This wetland is greater than one acre in size and is associated with the ox-bow cut off from Hangman Creek by the construction of SR 195.

Wetlands associated with Hangman Creek are present at the Hatch Road intersection. They are narrow linear strips along the stream on both sides of the creek. The area likely to be impacted will be less than one tenth acre.

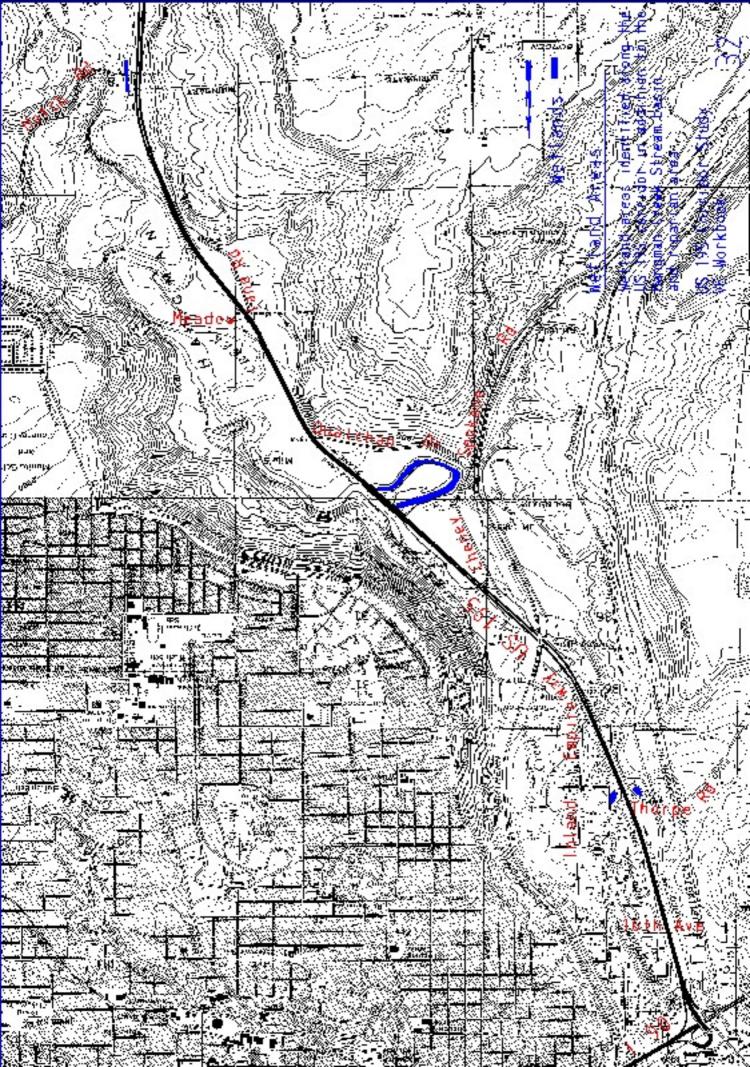
There is no evidence of any outstanding or irreplaceable wetlands along the corridor. The wetlands impacted are typical of this area. All wetland mitigation will follow the sequence to eliminate, reduce, and/or compensate for wetland impacts as set forth in Presidential Executive Order 11990 "Protection of Wetlands".

# Threatened / Endangered Species:

No T&E species will be adversely affected by these improvements. Peregrine falcons may be found in the Hangman Creek area as there is a known nest site on the Old Sunset Highway Bridge. No nest site for this species will be disturbed.

Bald eagles occur during the winter months and occasionally are seen along the creek. No known eagle nest sites occur within the limits of this study. Most Bald eagle sightings are associated with the Spokane River and Coeur d' Alene Lake area.

No sensitive plants are known to exist within the footprints of any intersections or new routes as studied.



# Phasing of the project (South Portion Only.)

#### Phase I

The first phase of construction will be to close the at-grade intersection on SR 195 MP 92.93 (Qualchan Road). A temporary cul-de-sac will be constructed at this time.

#### Phase II

During this phase the Hatch Road Interchange will be constructed. The new city street at the west end of the interchange will be closed off and the rest of the street (northbound) will be constructed at a later date.

#### Phase III

Construction of the Meadowlane intersection will occur and a barrier will be placed in the median to prevent cross traffic. A right in, right out turning movement will exist at SR 195 MP 92.28 until completion of phase IV.

The city street will be constructed from the new Meadowlane intersection north to Qualchan Road at this time. A temporary connection with the at-grade intersection on SR 195 at MP 92.28 will be maintained until Phase IV is completed.

The cul-de-sac at Qualchan Road will be removed at this time and the existing Qualchan Road and Cheney-Spokane Road to the commercial area will be improved as a part of this phase.

#### Phase IV

Construction of the type treet from Hatch Road north to Meadowlane intersection will be completed at this time. The at-grade intersection at MP 92.28 on SR 195 will be closed at this time. The connection from the city street to SR 195 at this location will also be closed. This connection could be gated and locked to provide an alternate route for emergency vehicles.

# North SR 195 Phasing

- 1. To eliminate access at 16th, east and west, and move that traffic to Thorpe Road via new city streets, both east and west, would only worsen an existing safety location at the Thorpe Road and SR 195 intersection.
- 2. Eliminating the all access or left turn access at Thorpe Road, may improve safety at that location but this existing movement would probably be transferred to Inland Empire way, worsening that situation.

The entire improvements proposed for this section from Cheney-Spokane Road to SR 90 must be done at one time in order to increase safety in this corridor. This work will include:

- A. City street east and west of SR 195 between 16<sup>th</sup> Ave. and Thorpe Road, eliminating access at 16th Ave.
- B. Thorpe Road connection over SR 195 and SB off ramp eliminating the need for access at Thorpe Road.
- C. Construct entire Cheney-Spokane Road Interchange, eliminating need for at grade access at both Cheney-Spokane Road and Inland Empire Way.
- D. Construct city street from Thorpe Road to Cheney-Spokane Road west of SR 195. Inland Empire Way is designated by the city as a Collector-Arterial therefore it is not designated to handle traffic from outside the Latah Creek Community.

# Construction Staging Hatch Road to SR 90

- 1. Qualchan Road intersection with SR 195 elimination
- 2. North Corridor Improvements
- 3. Hatch Road Interchange
- 4. Meadowlane Road connection with right in right Out at both sides of Meadowlane Road. Included with this is the city street construction from Meadowlane Road to Qualchan Drive and improvements to existing Qualchan Drive and Cheney-Spokane Roads.
- 5. City street construction from Meadowlane Road to Hatch Road
- 6. Costs

| 1) |   | \$20,000    |
|----|---|-------------|
| 2) | A) Cheney-Spokane I/C                                   | \$6,000,000 |
|    | B) City Street east of SR195, 16 th to Thorpe           | \$1,500,000 |
|    | C) City Street west of SR195 16 <sup>th</sup> to Thorpe | \$1,600,000 |
|    | D) Thorpe Road connection with ramp                     | \$3,900,000 |
|    | E) City Street Thorpe to Cheney-Spokane                 | \$2,000,000 |
| 3) |   | \$5,400,000 |
| 4) |   | \$3,100,000 |
| 5) |   | \$2,200,000 |

South - \$10,700,000 North - \$15,000,000 Total - \$25,700,000